

Question #1 of 20

Question ID: 439378

A stock is priced at 40 and the periodic risk-free rate of interest is 8 percent. What is the value of a two-period European call option with a strike price of 37 on a share of stock using a binomial model with an up factor of 1.20 and a (risk-neutral) up probability of 67 percent?

- A) \$20.60.
- B) \$9.25.
- C) \$3.57.
- D) \$9.07.

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Question ID: 439393

Which of the following is a condition needed in order for the binomial tree to approach the Black-Scholes model?

- A) Volatility changes stochastically over the life of the option.
- B) Interest rates change stochastically over the life of the option.
- C) Stock prices change in a discrete manner.
- D) The time intervals approach zero.

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Question ID: 439383

The current price of a non-dividend paying stock is \$75. The annual volatility of the stock is 18.25 percent, and the current continuously compounded risk-free interest rate is 5 percent. A 3-year European call option exists that has a strike price of \$90. Assuming that the price of the stock will rise or fall by a proportional amount each year, and that the probability that the stock will rise in any one year is 60 percent, what is the value of the European call option?

- A) \$3.24.
- B) \$12.91.
- C) \$22.16
- D) \$7.36.

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Question ID: 439391

Which of the following statements regarding the Black-Scholes-Merton option-pricing model is **TRUE**?

- A) The Black-Scholes-Merton model is superior to the binomial option-pricing model in its ability to price options on assets with periodic cash flows.

- B) The Black-Scholes-Merton option-pricing model is the discrete time equivalent of the binomial option-pricing model.
 - C) As the number of periods in the binomial options-pricing model is increased toward infinity, it converges to the Black-Scholes-Merton option-pricing model.
 - D) As the periods in the binomial option-pricing model are lengthened, it converges to the Black-Scholes-Merton option-pricing model.
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Question ID: 439374

The current price of Razor Manufacturing is \$20. In each of the next two years you expect the stock price to either move up 20 percent or down 20 percent. The probability of an upward move is 0.65 and the probability of a downward move is 0.35. The risk-free rate is 5 percent. The value of a 2-year American put option with strike price of \$24 is *closest* to:

- A) \$3.85.
 - B) \$3.65.
 - C) \$4.00.
 - D) \$3.22.
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Question ID: 439380

A stock currently trades at \$50. At the end of three months, the stock will either be \$55 or \$45. The continuously compounded risk-free rate of interest is 5 percent per year. The value of a 3-month European call option with a strike price of \$50 is closest to:

- A) \$2.78.
 - B) \$2.25.
 - C) \$2.55.
 - D) \$2.89.
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Question ID: 439377

A stock that currently trades at \$40 can either move up or down by 5 percent each year. The continuously compounded risk-free rate is 4 percent. An over-the-counter European call option with 2 years until expiration is set up so that the strike price is determined by the formula $\$40 + [(\text{years to expiration} + 1) \times 0.5]$ in periods when the stock price increases. In periods when the stock price declines, the strike price is \$40. What is the value of this 2-year specialized OTC call option?

- A) \$2.74.
 - B) \$3.12.
 - C) \$2.56.
 - D) \$3.27.
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Question ID: 439392

As the binomial model of option prices is altered by increasing the number of periods:

- A) the results stabilize at 30 periods.
 - B) option values increase.
 - C) it eventually converges to the Black-Scholes-Merton option-pricing model.
 - D) volatility increases.
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Questions #9-14 of 20

Al Bingly, CFA, is a derivatives specialist who attempts to identify and make short-term gains from trading mispriced options. One of the strategies that Bingly uses is to look for arbitrage opportunities in the market for European options. This strategy involves creating a synthetic call from other instruments at a cost less than the market value of the call itself, and then selling the call. During the course of his research, he observes that Hilland Corporation's stock is currently priced at \$56, while a European-style put option with a strike price of \$55 is trading at \$0.40 and a European-style call option with the same strike price is trading at \$2.50. Both options have 6 months remaining until expiration. The risk-free rate is currently 4 percent.

Bingly often uses the binomial model to estimate the fair price of an option. He then compares his estimated price to the market price. He observes that Dale Corporation's stock has a current market price of \$200, and he predicts that its price will either be \$166.67 or \$240 in one year. The risk-free rate is currently 4 percent. He also observes that the price of a one-year call with a \$220 strike price is \$11.11.

Bingly also uses the Black-Scholes-Merton model to price options. His stated rationale for using this model is that he believes the prices of the stocks he analyzes follow a lognormal distribution, and because the model allows for a varying risk-free rate over the life of the option. His plan is to use a statistical technique to estimate the volatility of a stock, enter it into the Black-Scholes-Merton model, and see if the associated price is higher or lower than the observed market price of the options on the stock.

Bingly wishes to apply the Black-Scholes-Merton model to both non-dividend paying and dividend paying stocks. He investigates how the presence of dividends will affect the estimated call and put price.

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Question ID: 439385

In the case of the options on Hilland Corporation's stock, if Bingly were to establish a long protective put position, he could:

- A) not earn an arbitrage profit because he should short the protective put position.
- B) not earn an arbitrage profit because the position is in equilibrium.
- C) earn an arbitrage profit of \$0.30 per share by selling the call and lending \$57.20 at the risk-free rate.
- D) earn an arbitrage profit of \$0.03 per share by selling the call and borrowing the remaining funds needed for the position at the risk-free rate.

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Question ID: 439386

The one-year call option on Dale Corporation:

- A) may be over or underpriced. The given information is not sufficient to give an answer.
- B) is overpriced.
- C) is underpriced.

D) is fairly priced.

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Question ID: 439387

Bingly's sentiments towards the Black-Scholes-Merton (BSM) model regarding a lognormal distribution of prices and a variable risk-free rate are:

- A) incorrect concerning the distribution of stocks but correct concerning the risk-free rate.
- B) incorrect for both reasons.
- C) correct concerning the distribution of stocks but incorrect concerning the risk-free rate.
- D) correct for both reasons.

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Question ID: 439388

Which of the following is *least* accurate regarding the limitations of the BSM model?

- A) The BSM is designed to price American options but not European options.
- B) The BSM is not useful in situations where the volatility of the underlying asset changes over time.
- C) The BSM is not useful in pricing options on bonds and interest rates.
- D) The assumption of no taxes or transaction costs makes the BSM less useful.

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Question ID: 439389

If Bingly forecasts the volatility for a stock and find that it is significantly greater than that implied by the prices of the puts and calls of the stock, he would conclude that:

- A) the puts are underpriced and the calls are overpriced.
- B) the puts are overpriced and the calls are underpriced.
- C) puts and calls are underpriced.
- D) puts and calls are overpriced.

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All else being equal, the greater the dividend paid by a stock the:

- A) lower the call price and the lower the put price.
- B) higher the call price and the higher the put price.
- C) higher the call price and the lower the put price.
- D) lower the call price and the higher the put price.

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Question ID: 439375

A stock that is currently trading at \$30 can move up or down by 10 percent over a 6-month time period. The probability of the stock moving up in price in a 6-month period is 0.6074. The continuously compounded risk-free rate is 4.25 percent. The value of a 1-year American put option with an exercise price of \$32.50 is *closest* to:

- A) \$2.75.

- B) \$2.49.
- C) \$5.50.
- D) \$3.42.

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Question ID: 439379

A stock is priced at 38 and the periodic risk-free rate of interest is 6 percent. What is the value of a two-period European put option with a strike price of 35 on a share of stock using a binomial model with an up factor of 1.15 and a risk-neutral probability of 68 percent?

- A) \$0.64.
- B) \$0.57.
- C) \$2.58.
- D) \$2.90.

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Question ID: 439376

A two-period interest rate tree has the following expected one-period rates:

<u>t = 0</u>	<u>t = 1</u>	<u>t = 2</u>
		7.12%
	6.83%	
6.00%		6.84%
	6.17%	
		6.22%

The price of a two-period European interest-rate call option on the one-period rate with a strike rate of 6.25% and a principal amount of \$100,000 is *closest* to:

- A) \$725.86.
- B) \$704.22.
- C) \$423.89.
- D) \$449.33.

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Question ID: 439394

The pricing results of the Black-Scholes-Merton model can be derived by:

- A) taking the limit as the periods in the binomial model become shorter.
- B) using a regression model of prices on volatility.

- C) lengthening the periods in the binomial model.
 - D) solving a system of simple mathematical equations.
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Question ID: 439382

A stock that is currently trading at \$50 and can either move to \$55 or \$45 over the next 6-month period. The continuously compounded risk-free rate is 2.25 percent. What is the risk-neutral probability of an up movement?

- A) 0.5656.
 - B) 0.5566.
 - C) 0.6655.
 - D) 0.6565.
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Question #20 of 20

Question ID: 439381

Calculate the value of a one-year put option today for a stock that currently trades at \$40 and can either move to \$44 or \$36 at the end of a year. The continuously compounded risk-free rate is 3 percent and the put strike price is \$40. The put option's value is *closest* to:

- A) \$1.35.
- B) \$2.02.
- C) \$2.70.
- D) \$2.36.